

REPORT  
FROM  
THE SECRETARY OF WAR,

WITH

*A copy of the Survey of the Harbor of Milwaukee; in compliance with a resolution of the Senate.*

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FEBRUARY 27, 1837.—Read, and referred to Committee on Commerce.

MARCH 3, 1837.—Discharged.

MARCH 9, 1837.—Ordered to be printed.

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WAR DEPARTMENT,  
*February 25, 1837.*

SIR: I have the honor to transmit, herewith, the copy of the survey, &c. of the harbor of Milwaukee, required by a resolution of the Senate of the 23d instant.

Very respectfully,  
Your most obedient servant,  
B. F. BUTLER,  
*Secretary of War ad interim.*

Hon. W. R. KING,  
*President of the Senate pro tempore.*

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TOPOGRAPHICAL BUREAU,  
*Washington, February 25, 1837.*

SIR: I have the honor of transmitting to you the plan, report, and estimate for the improvement of the harbor of Milwaukee, called for by a resolution of the Senate of the 23d instant.

Upon examining the plan and report, objections have occurred to the position of the proposed piers, which are respectfully submitted to your consideration. These are—

1st. That the whole extent of the present fine harbor lying between the position of the contemplated improvement and the natural outlet of the river, would probably fill up, and be in time destroyed, as the only natural means of keeping it open would be from the current of the small stream of Bois Gris creek.

2d. Upon the plan proposed the present outlet would have to be filled up, in order to force the entire discharge of the river through the outlet between the piers, which would increase the cost of the improvement proportionally.

3d. The position proposed for the piers does not appear to possess any advantages over that at the natural outlet, the deep water of the lake being about equidistant from the shore at each place.

4th. The accessory structures for filling up the old outlet and forcing the river to discharge itself through the one proposed, would make the improvement at this latter position much the more costly of the two. And it may further be deserving of consideration, whether the private rights and interests of individuals, acquired under the present position of the outlet and condition of the harbor, would not be so seriously affected by the proposed change of the outlet, as to lay a foundation for claims of remuneration and damages.

From these reflections, while the plan of the structure is approved, the propriety of its proposed position is made doubtful. There may be reasons peculiar to the locality, which may obviate the objections stated; but as these are unknown to the bureau, allow me respectfully to suggest, that any appropriation made for the contemplated improvement may be free from expressions which would fix the position of the piers.

Very respectfully, sir,

Your obedient servant,

J. J. ABERT,

*Lieut. Col. Top. Engineers.*

Hon. B. F. BUTLER,

*Secretary of War ad interim.*

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DETROIT, *February 4, 1837.*

SIR: During the last summer I was directed by the War Department to cause an examination to be made of the entrance to Milwaukee, on Lake Michigan, with a view of ascertaining the capacity of the place as a harbor, as well as the improvement necessary to render it at all times safe and easy of access.

The survey was accordingly made by Lieutenants Centre and Rose, of the army, at that time on topographical duty, and employed under my orders; and the result of their examination reported to me.

Subsequent occurrences have necessarily delayed the completion of this work; but, at the request of the persons interested, I have now the honor to furnish the result of the survey, together with a map of the entrance and plan for the improvement deemed necessary, with an estimate of its probable cost.

The importance of so improving this place as to render it accessible at all times to all classes of vessels navigating the upper lakes, is believed to be admitted by all who have any knowledge of the great and increasing trade on Lake Michigan; and, indeed, the necessity for construction of harbors at this and other points susceptible of improvement, is becoming more and more apparent, from the heavy losses of property

and life which are sustained yearly, the effect of which is not only to increase greatly the expense of transportation, but seriously to retard the settling of one of the most valuable and fertile portions of our country.

Of the points on Lake Michigan now claiming the attention of the General Government, Milwaukee may justly be considered among the first, not only from the fact that it affords every facility for the construction of a commodious harbor, and that its advantages, in a commercial point of view, are scarcely surpassed by those of any other place on the lake, but, also, that it is destined to become the outlet of a vast extent of fertile country, the greater part of which is still unsold. I might also add that, from its position and general advantages, it will probably be made, at no very distant day, the termination of extensive works of internal improvement between the lake and the Mississippi, which will form a very important link in the chain of works by which it is proposed to connect the valley of this stream with the Atlantic cities, the accomplishment of which great project can no longer be considered doubtful.

In its present condition the entrance to the river is difficult, and but very few vessels, those of light draught and with favorable winds, are able to effect it; but, notwithstanding, the trade of the place has already grown into importance, an idea of which may be formed from the fact that, within the last season, upwards of 200 vessels of all classes have touched there.

The accompanying map is drawn upon a scale of 24 inches to the mile, and represents the shore of the lake, the river and its borders, as far up as the mouth of the Menomonie, and the depth of water in feet, the soundings in the lake carried out to 3 fathoms, beyond which there are no obstructions. It will be seen by the smaller map, that the mouth of this stream is at the head of a considerable bay or indentation, in the form of a semicircle, the outer points of which protect it, in a great measure, from heavy winds, and from the wash along the lake shore. Owing to this circumstance, the variation in depth of water, and the shifting sands or bars generally found at the mouth of lake streams, are here of far less importance. The deposits from the river is very trifling, and need not be considered.

Inside, and as far as the mouth of the Menomonie, the depth of water in the channel varies from 11 to 16 feet, the least of which is sufficient for the largest class of vessels upon the lake.

The only improvement, therefore, which is deemed necessary, is the protection of the entrance by means of piers of a permanent construction, and carried out to a sufficient depth to prevent the passage between them from being affected by the waves of the lake, or the construction of a new entrance which shall be protected in like manner.

For about half a mile above its mouth, the river is separated from the lake by a narrow beach or sand-ridge, at the upper end of which it no doubt once discharged itself. With the view, therefore, of obtaining a more free discharge, by restoring the river to its natural channel, as well as of rendering it more easy of access, I have placed the piers at this point. The ridge is here about 175 feet wide, and but 5 or 6 feet high; and as it is composed altogether of sand and fine gravel, by a small cut through it the current may be made to assist very much in the operation of clearing out.

From the shore to 14 feet water in the lake, where the pier heads are placed, is 660 feet, and the distance between the piers is assumed at 250 feet. This distance is greater than has been adopted in any other case within my knowledge, and cannot be considered as necessary; but the discharge from the stream is believed to be sufficient to keep open a passage of this width, and the entrance would be rendered somewhat more easy, while the additional expense of dredging would be altogether unimportant. If, for any reason, however, this width should be objected to, 200 feet will answer, and may be safely adopted.

For the piers I would recommend a plan similar to one which has already been used with success on Lake Michigan, the details of which will be found upon the map. It consists of cribs formed of side-logs of squared timber firmly bolted together, and cross-ties at every ten feet of each course framed into the side-logs, with piles so inserted as to bind the whole firmly together and secure it to the bottom. The cribs being previously framed and prepared, are floated to their positions and sunk, the piles are then inserted and driven, and the crib filled with stone to the height of four feet above water; width of piers 24 feet from outside to outside, and pier heads 48 feet square, height above water 7 feet.

From the shore of the lake back to the river the same strength is not required, and plank piling may here be used with economy, the sides being well tied together at top, and the interior filled with sand instead of stone; the piers and pier heads to be covered with 3-inch oak plank, and the space between them to be dredged out to the depth of 11 feet.

Of the materials required for the construction, an abundance of timber and stone may be obtained upon the borders of the Milwaukee and Menomonie, within two miles of the lake. Stone may also be had upon the lake shore within five or six miles, but the loading would be difficult, and this article may best be quarried upon the Menomonie.

The following statement exhibits the proposed dimensions, the quantities of materials, of excavation, dredging, &c., and their probable cost, as well as the cost of workmanship, labor, &c.

*Two piers.*—From the shore to 14 feet water in the lake, each 660 feet, 24 feet wide, average height  $14\frac{1}{2}$  feet; from the shore back to edge of marsh, 340 feet, width 24 feet, average height 4 feet.

*Two pier heads.*—Average height 21 feet; height of piers and pier heads above water, 7 feet.

#### *Quantities of materials, &c.*

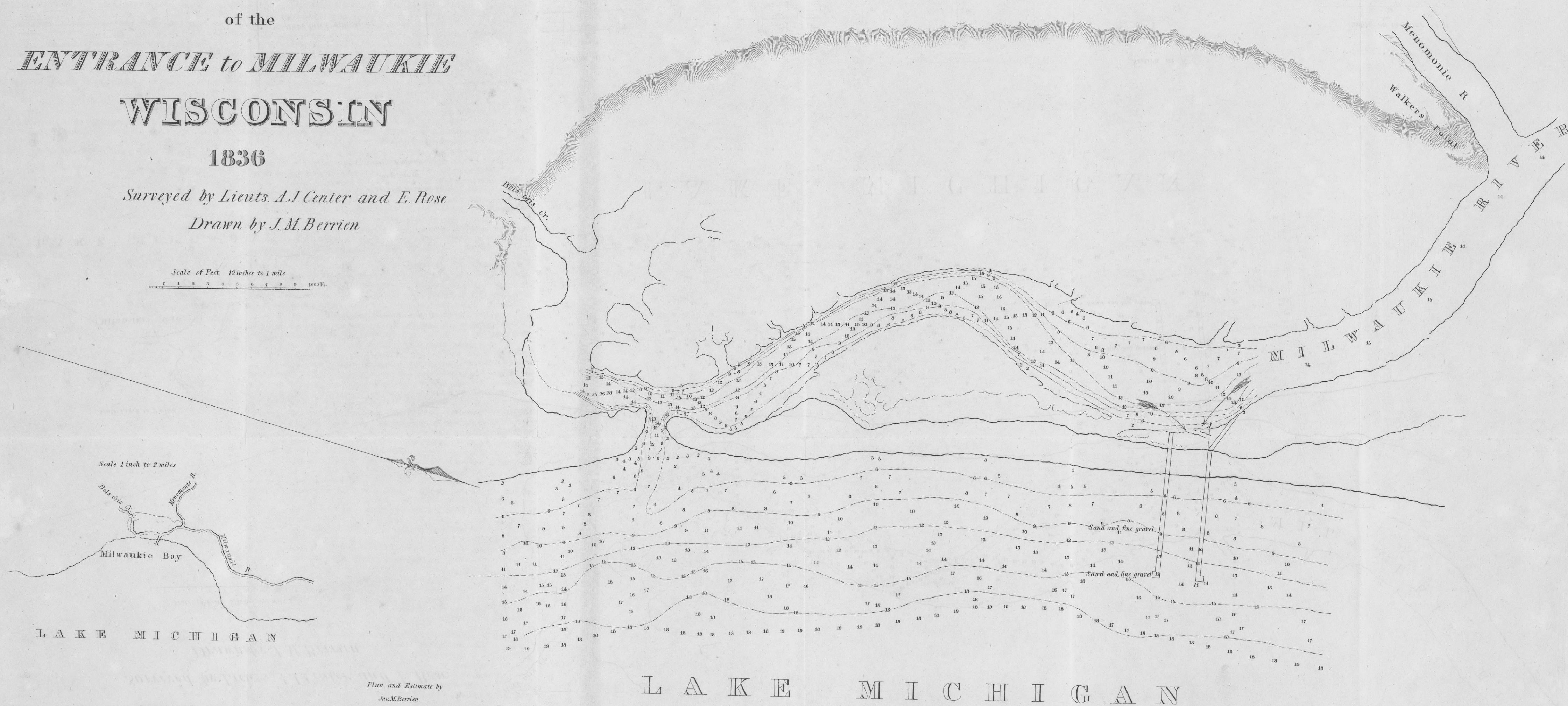
|   |                 |            |
|---|-----------------|------------|
| Soft timbers 12 × 12 for side logs of cribs below water,    | 24,500 feet, at |            |
| 9 cents   | -               | \$2,205 00 |
| Oak timbers 12 × 12 for side logs of cribs above water,     |                 |            |
| 23,550 feet, at 10 cents                                    | -               | 2,355 00   |
| Do. 10 × 10 and 8 × 10 for ties and braces of top           |                 |            |
| course and for piles, 20,000 feet, at 10 cents              | -               | 2,000 00   |
| Do. 14 × 14 for coping, 3,416 feet, at 12 cents             | -               | 409 92     |
| Round logs for ties, soft wood below water, 23,760 feet, at |                 |            |
| 3 cents   | -               | 712 80     |
| Do. oak above water, 25,456 feet, at 4 cents                | -               | 1,018 24   |
| 3-inch oak plank for sheet piles, clamp, and for covering   |                 |            |
| piers and pier heads, 54,000 feet, plank measure, at \$45   | -               | 2,470 00   |



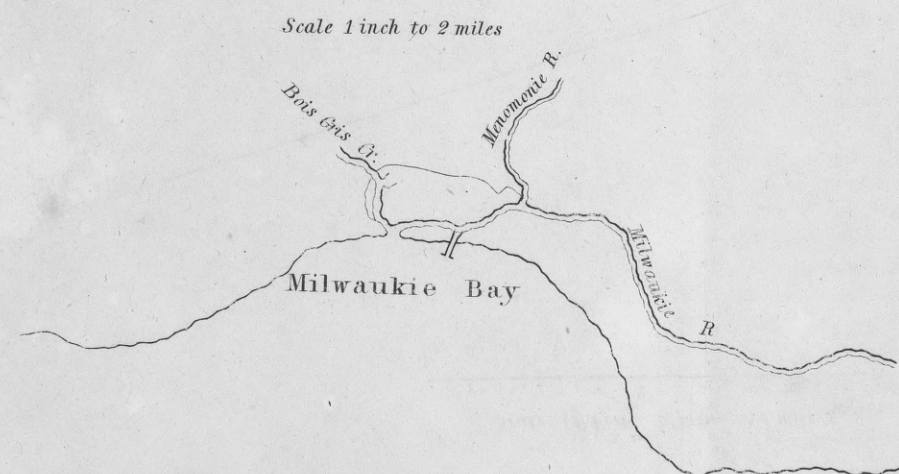
SURVEY  
of the  
*ENTRANCE to MILWAUKIE*  
WISCONSIN  
1836

Surveyed by Lieuts. A.J. Center and E. Rose  
Drawn by J.M. Berrien

Scale of Feet. 12 inches to 1 mile

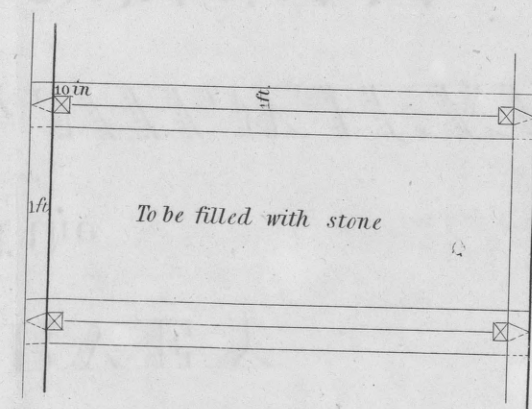
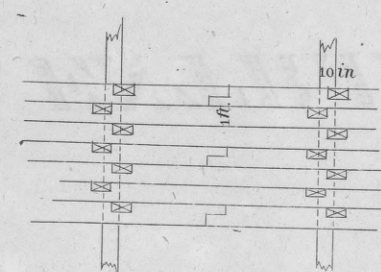


Scale 1 inch to 2 miles

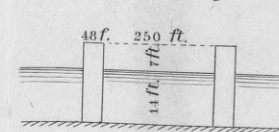


Plan and Estimate by  
Jas. M. Berrien  
Civil Engineer

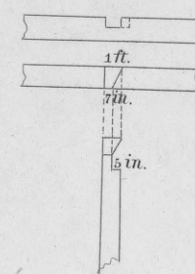
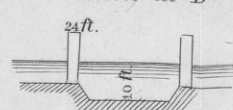
Framing for Crib



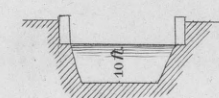
Section at C



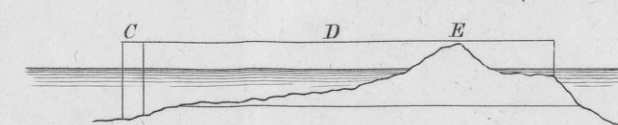
Section at D



Section at E



Profile on the line A B



Horizontal Scale 12 in. to 1 mile

Vertical do. 50 ft. to 1 inch



|   |   |   |   |   |                                     |
|---|---|---|---|---|-------------------------------------|
| Stone, 2,838 cords, at \$6  | - | - | - | - | 17,028 00                           |
| Iron, bars 1 inch square for bolts, 9,000 lbs., at 7 cents                      | - | - | - | - | 630 00                              |
| 9-inch spikes, 18,140 lbs., at 10 cents   | - | - | - | - | 1,814 00                            |
| for smaller spikes, nails, &c., 1,000 lbs., at 12½ cents                        | - | - | - | - | 125 00                              |
| add for smithery  | - | - | - | - | 1,000 00                            |
| Excavation through sand-ridge, 4,857 cubic yards, at 18 cents                   | - | - | - | - | 874 26                              |
| For the removal, by dredging, of 48,322 cubic yards, at 50 cents                | - | - | - | - | 24,161 00                           |
| For tools, implements, pile-drivers, scows, boats, and rigging, cattle, &c.     | - | - | - | - | 7,000 00                            |
| For workmanship, labor, subsistence, compensation to superintendent, clerk, &c. | - | - | - | - | 20,000 00                           |
|   |   |   |   |   | <hr/> 83,803 22                     |
| Add for contingencies 10 per cent.  | - | - | - | - | 8,380 32                            |
|   |   |   |   |   | <hr/> Total cost <u>\$92,183 54</u> |

The above report and estimate, together with the accompanying map and plans, are respectfully submitted for the information of those who are interested.

I have the honor to be, sir,

Your obedient servant,

JOHN M. BERRIEN,

*Civil Engineer.*

MORGAN L. MARTIN, Esq.

